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Probabilistic theories of reasoning need pragmatics too: Modulating relevance in uncertain conditionals

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Abstract

According to probabilistic theories of reasoning in psychology, people's degree of belief in an indicative conditional "if A , then B " is given by the conditional probability, $P(B|A)$. The role of language pragmatics is relatively unexplored in the new probabilistic paradigm. We investigated how consequent relevance affects participants' degrees of belief in conditionals about a randomly chosen card. The set of events referred to by the consequent was either a strict *superset* or a strict *subset* of the set of events referred to by the antecedent. We manipulated whether the superset was expressed using a disjunction or a hypernym. We also manipulated the source of the dependency, whether in long-term memory or in the stimulus. For subset-consequent conditionals, patterns of responses were mostly conditional probability followed by conjunction. For superset-consequent conditionals, conditional probability responses

were most common for hypernym dependencies and least common for disjunction dependencies, which were replaced with responses indicating inferred consequent irrelevance. Conditional probability responses were also more common for knowledge-based than stimulus-based dependencies. We suggest extensions to probabilistic theories of reasoning to account for the results.



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Keywords

Probability; Conditionals; Interpretation; Relevance; Reasoning

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Andrew J.B. Fugard is a cognitive scientist with a background in computer science and psychology. He received his PhD in 2009 from the University of Edinburgh, with a thesis on how sub-clinical autistic traits affect the way people interpret and reason about, e.g., conditional and quantified sentences. Since 2008 he has worked at the University of Salzburg, first as a postdoc at the Psychology Department on a project investigating how people reason about uncertainty, then in September 2010 he joined the Center for Advanced Studies and Research in Information and Communication

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Bastian Mayerhofer received his Master’s in 2009 from the University of Salzburg, with a thesis on a linguistic style analysis of selected texts by the Salzburg-born writer Kathrin Röggla. He recently submitted a second Master’s thesis in psychology, on the interpretation of natural language conditionals in uncertain environments. Since January 2011, he is at the Courant Forschungszentrum *“Textstrukturen”* in Göttingen, Germany, doing a PhD in psycholinguistics on text structures and emotions.

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